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914-332-0615

T-968 P.003/008 F-391

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

PAOLA CARRAI ET AL.

SERIAL NO.: 09/759,022

FILED: January 11, 2001

TEXT IMPROVEMENT

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

RESPONSE UNDER 37 C.F.R. 1.116

This is in response to the Office Action mailed September 15, 2003, in which the Examiner finally rejected claims 1, 7 and 8 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,067,070 to Suzuki et al.; claim 2 under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of U.S. Patent 5,956,468 to Ancin; claim 3 under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of U.S. Patent 6,038,340 to Ancin et al. and further in view of Ancin; claim 4 under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of U.S. Patent 6,148,102 to Stolin; claim 5 under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of the article "Thresholding and Enhancement of Text Images for Character Recognition" to W.W. Cindy Jiang, and further in view of U.S.

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Patent 5,781,658 to O'Gorman; and claim 6 under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of Jiang.

The Suzuki et al. patent discloses a display control apparatus having a display of text data and image data and a display control method for the same, in which, in a signal, it is detected whether a region is or is not a text region. If the region is a text region, scaling is performed with a scale down percentage of 66%, and if the region is not a text region, scaling is performed with a scale down percentage of 50%. It is then determined if the entire text or image data is displayable in the allotted region on the display. If not, a scroll bar is added allowing a user to scroll the display in each allotted region enabling the viewing of the entire text or image data.

The subject invention relates to a process for improving text as a part of an image signal. To that end, the signal is analyzed to detect text regions (as in Suzuki et al.). However, in the subject invention, the entire image signal is then subjected to scaling in order to match the image signal with a display on which the image signal is to be displayed. As such, an entire frame of the image signal will then be displayed on the display, as opposed to a partial frame of the image signal. Then, the scaled signal is post-processed in dependence on the detected text regions, i.e., the scaled image signal is subjected to post-processing (e.g.,

binarization) in only the detected text regions to thereby improve the readability of the text.

Applicants submit that Suzuki et al. does not show or suggest "scaling the image to adjust first numbers of pixels per line and lines per image of the image to second numbers of pixels per line and lines per image that fit in a display on which the image is to be displayed". Rather, Suzuki et al. selectively scales text areas by one fixed percentage (e.g., 66%), and image data by a second fixed percentage (e.g., 50%), and there is no suggestion in Suzuki et al. that these percentages are based on enabling the image to fit in a display on which the image is to be displayed. Rather, Suzuki et al. particularly addresses the situation where the display text (or image) region is too small for the text (or image) area, i.e., Suzuki et al. selectively adds scrolling buttons.

Further, Applicants submit that Suzuki et al. does not show or suggest "processing the image after having been scaled in dependence on a result of the text detecting step". In response to this, the Examiner has cited col. 9, lines 51-61, and Fig. 1. However, Applicants submit that it should be apparent that the detecting of text data only affects the percentage of scaling. After the scaling, there is no processing in dependence on a result of the text detecting step. Rather, as shown in Fig. 1 of Suzuki et al., after both the scaling of the text data (S5) and the scaling

of the image data (S12), the same steps are performed, i.e., S6/S12 - "ALL DATA DISPLAYED?", and S7/S13 - "DISPLAY BAR TO INDICATE EXISTENCE OF HIDDEN TEXT". In fact, Applicants submit that steps S7 and S13 do not "process" the text/image data, but rather, add to the text/image data.

The Ancin patent discloses a document segmentation system in which a signal having both text and image regions is analyzed. The text regions are detected (i.e., "The method and apparatus then detect dark text pixels on a light background region of a document and assign segmentation labels to each pixel.") As further stated in the Abstract, "The pixel labels are post-processed using a plurality of syntactic rules to correct mislabeling of pixels." Further, "Pixels identified as being in the background region of the document are assigned a white label and pixels identified as being in the text region are assigned a black label."

Applicants submit that Ancin only changes the text to black and the background to white. Ancin neither shows nor suggests that this should be done in a pre-scaling step, and that in a post-scaling step, the text and background should be returned to their previous colors.

Furthermore, Applicants submit that Ancin does not supply that which is missing from Suzuki et al., i.e., scaling the entire signal after detection of the text regions, the scaling being performed such that the image of the signal fits in a display on

which the image is to be displayed, and then post-processing the scaled signal in dependence on the previously detected text regions.

The Ancin et al. patent discloses a system and method for detecting the black and white points of a color image, in which, in a particular region, the number of black pixels is compared to the number of white pixels to determine whether that region is a text region. However, Applicants submit that Ancin et al. or Ancin, either individually or collectively, do not supply that which is missing from Suzuki et al., i.e., scaling the entire signal after detection of the text regions, the scaling being performed such that the image of the signal fits in a display on which the image is to be displayed, and then post-processing the scaled signal in dependence on the previously detected text regions.

The Stolin patent discloses recognizing text in a multicolor image, in which, in detecting text, "the image is separated into multiple blocks. Color distribution of each of the blocks are analyzed, and blocks having two main colors are identified. The two-color blocks having similar colors are grouped into two-color zones, and text in the two-color zones are identified." However, Applicants submit that Stolin does not supply that which is missing from Suzuki et al., i.e., scaling the entire signal after detection of the text regions, the scaling being performed such that the image of the signal fits in a display on

which the image is to be displayed, and then post-processing the scaled signal in dependence on the previously detected text regions.

The Jiang article discloses "Each sub-pixel in the interpolated graytone image has an associated threshold ... If a sub-pixel intensity is larger than its threshold, binarize it into a black sub-pixel; otherwise make it a white sub-pixel." However, as Applicants noted above with respect to the other references, Jiang does not supply that which is missing from Suzuki et al., i.e., scaling the entire signal after detection of the text regions, the scaling being performed such that the image of the signal fits in a display on which the image is to be displayed, and then post-processing the scaled signal in dependence on the previously detected text regions.

In view of the above, Applicants believe that the subject invention, as claimed, is neither anticipated nor rendered obvious by the prior art, either individually or collectively, and as such, is patentable thereover.

Applicants believe that this application, containing claims 1-8, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

by   
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Edward W. Goodman

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Atty. Docket  
 PAOLA CARRAI ET AL. PHIT 000001  
 Serial No.: 09/759,022 Group Art Unit: 2671  
 Filed: January 11, 2001 Examiner: L.T. McCartney  
 Title: TEXT IMPROVEMENT

Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

Sir:

Enclosed is an amendment in the above-identified application.

No additional fee is required.

The fee has been calculated as shown below.

| CLAIMS AS AMENDED   |                                  |                                    |              |      |                |
|---|----------------------------------|------------------------------------|--------------|------|----------------|
|   | Claims remaining after amendment | Highest number previously paid for | Number extra | Rate | Additional Fee |
| Total Claims  | 8 Minus 20 <sup>1</sup> =        |                                    | X \$18=      | \$   |                |
| Independent Claims  | 2 Minus 3 <sup>2</sup> =         |                                    | X \$86=      | \$   |                |
| Multiple Dependent Claims, if any. If not previously paid, \$290. |                                  |                                    |              |      | \$             |
| Total Additional fee for this amendment =                         |                                  |                                    |              |      | \$             |

<sup>1</sup>If less than 20, enter 20. <sup>2</sup>If less than 3, enter 3.

Please charge any fees which may be required, except the issue fee, or credit any overpayment to Deposit Account No. 14-1270.

  
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